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UNITED STATES AIR FORCE RESEARCH LABORATORY

JOINT HUMAN SYSTEMS INTEGRATION E-LEARNING

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14. ABSTRACT
This paper collects two reports describing e-learning technologies that both train and foster collaboration and knowledge sharing among work groups. The first is "Joint Human Systems Integration (HSI) E-Learning." This paper was published in the proceedings of the Human Systems Integration Symposium (HSIS) 2003. It describes an innovative e-learning course that uses working simulation problems to train an appreciation of the tradeoffs among important HIS elements, such as physical requirements, training requirements, and reliability. The second paper, "Air Force Material Command Knowledge Now: Web resources for workforce collaborations and learning" was published in the March 2003 issue of the AFRL Horizons e-journal. This paper describes the utilization of a collaborative web-space for aggregating information, courseware, and wisdom among a "community of practice." This paper results from the experience of implementing a "Joint Human Systems Integration" community of practice at that site.

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PREFACE

The two articles in this technical paper describe the work conducted under Work Unit 1123-B1-15, Acquisition E-learning Support. Each paper refers to the other and both are being published to fulfill the reporting requirement for this work unit. The objective of this research effort was to take advantage of emerging Internet technologies, utilize e-Learning strategies to provide critical knowledge to the Air Force Research Laboratory (AFRL) and the Air Force Materiel Command (AFMC) workforce, and to create opportunities for sharing ideas and generating new knowledge that would promote a more agile acquisition environment.

The work was conducted under Delivery Order No. 36 of Air Force Contract F41624-97-D-6004 with Veridian Engineering Inc. The contractor conducted a knowledge needs assessment and provided recommendations on e-learning products to the government. E-Learning products included mechanisms for increasing awareness for the workforce, web-based training, performance support tools, and support for online collaboration. Actual application of technologies to specific products was based on the research findings and budget impact.

This research effort was transferred to Scott Chaiken in April 03. This work includes (a) an e-learning course on Joint Human Systems Integration (available at: **http://elearning.veridian.com/HSI/home/HSI_home.cfm**, to be eventually hosted at the Air Force Institute of Technology (AFIT) and registered in the Defense Technical Information Center (DTIC) as a learning resource), and (b) the establishment of a Joint Human Systems Integration "community of practice" at AFMC's Knowledge Now website.

The attached paper documents an article published in the Human Systems Integration Symposium (HSIS) 2003, "Enhancing Human Performance in Naval and Joint Environments," held 23-25 June 2003, in Vienna, Virginia.

In addition, the paper documents a general article on AFMC's Knowledge Now information-sharing and collaboration framework (performed under contract and online at: **http://www.afrlhorizons.com/Briefs/he.html**, and published in AFRL Technology Horizons, March 2003 issue.

Joint Human Systems Integration E-Learning

Desiree Tryloff, Program Manager, E-Learning
and Knowledge Management Initiatives, Veridian, Inc.

INTRODUCTION

Across all services, the push to implement Human Systems Integration (HSI) has become a priority if our military is to achieve improved system performance and reduced life cycle costs. This paper will discuss how the HSI training representatives for the Army, Navy, and Air Force joined together to provide needed HSI online learning support to their acquisition communities. It will discuss the learning objectives that were identified. It will describe how each learning objective was addressed, and describe the HSI online learning support resources created through this joint effort and how they were designed to support the application of HSI throughout the systems acquisition process. The paper also provides instruction on how the military workforce can access each of these HSI learning resources to assist in their application of HSI within their programs.

IDENTIFYING THE LEARNING OBJECTIVES

A two-day, E-Learning Analysis Workshop was conducted to identify the learning needs and to then brainstorm e-learning design ideas for delivering the learning to the workforce. During the Analysis Workshop, Army, Navy, and Air Force HSI representatives worked together to define the four overarching learning goals to be achieved.

1 Know the necessity of incorporating HSI elements into the acquisition process beginning with requirements definition and throughout the system life cycle.
2 Understand the characteristics of the HSI domain.
3 Understand how HSI optimizes total system performance and minimizes total ownership cost.
4 Be able to access timely and relevant HSI resources.

The resultant Introduction to Human Systems Integration course is designed to promote awareness of HSI concepts and to assist acquisitions professionals in establishing the knowledge needed to put HSI principles into practice. After discussing exactly what it is that we want the learner to do upon accomplishing the training, the team decided on three different E-Learning components:

- An Introduction to HSI Tutorial for addressing the first learning goal
- An interactive game-like exercise for addressing the second and third learning goals, and
- A *Joint HSI Community of Practice* site, for addressing the fourth learning goal.

INTRODUCTION TO HSI TUTORIAL

The team agreed that the most important message to be learned by the workforce is the importance of conducting HSI within all acquisition programs. In addition, this message needs to be understood by all levels of acquisition management. We addressed the first goal through development of an Introduction to HSI tutorial. The tutorial provides current messages and examples from all three services on the need for and benefits of HSI. It introduces each of the HSI elements and links the learner to policy supporting the use of HSI.

The tutorial is designed to engage the learner through the interactive use of simulation-like questions. Thalheimer (2002) illustrated how the use of simulation-like questioning can improve learning outcomes 50% to 190% or more. Significantly less costly than full-blown simulations, simulation-like questions cause the learner to think through realistic decisions within realistic scenarios, and to retrieve information from short and long-term memory. Learners are also presented with intrinsic feedback related to their response. For example, at the beginning of the tutorial the learner is asked the following question:

- *"To maximize our warfighter capability, we are developing increasingly complex technology and automation. The challenge is to leverage technology to ensure that the ultimate warfighter capability is achieved with affordable systems. How would you describe this challenge?"*

The purpose of the series of questions is not to "test" knowledge of reviewed (memorized) content; none has been presented yet. Rather it is to get the learner thinking about the challenges of HSI. Feedback is provided based on the learner's response. For example, one response to the above question is:

- *Response: "The military will need to provide better training programs and find better, more educated recruits to ensure that the technology and automation can be operated to achieve their full potential."*

The feedback provided to the learner addresses this particular response:

- *Feedback: "That is not sufficient. We cannot rely solely on training and recruiting to maximize our full warfighting capability. The human element of our future battlefields must be addressed early in every acquisition program if we are to respond more rapidly and decisively across the full spectrum of operations."*

The correct response and feedback for the learner is:

- *Response: "The acquisition professional will need to balance higher investments needed to apply human considerations against other program requirements in order to optimize system performance and reduce total ownership costs.*

- *Feedback: "Yes, and an example is the Comanche program. The Comanche is the first program to have systematically applied human-centered systems integration principles,*

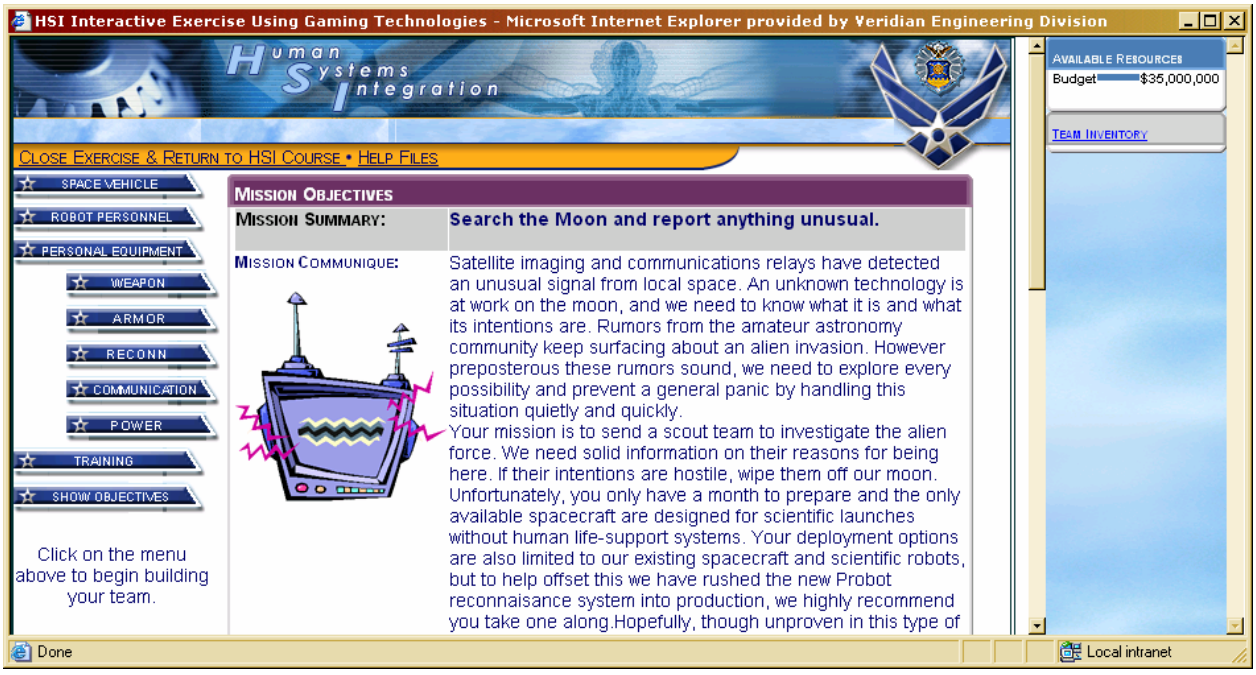
skills, and technology from the beginning of the acquisition process. It is regarded as a model for successful HSI application in terms of design performance and significant cost avoidance.

The tutorial continues with a discussion of the Comanche program. The learner has thought about the HSI challenges and now has a context in which to receive the information provided through the Comanche example. At the end of the section, the learner is asked to recall another aspect of the importance of HSI ("repetition.") Through the use of simulation-like questions and repetition, the "Introduction to HSI" tutorial attempts to establish learner buy-in regarding the need for HSI.

HSI INTERACTIVE EXERCISE

The second and third learning goals discuss the need for the acquisition workforce to understand the interrelationship among HSI elements and between HSI and the total system. These learning goals stress the need of the learner to understand the complexity in the relationships, and to understand that balancing the elements entails trade-offs and compromise. At the same time, not addressing the trade-offs can cause serious consequences for the mission and the warriors, and can have long-lasting impacts on program costs. The team agreed that these issues were best addressed by allowing the learner to experience balancing the elements and then receiving intrinsic feedback on their actions. Therefore, we developed an interactive game-like exercise in which the learner can apply newly acquired HSI knowledge to navigate and successfully complete various acquisitions scenarios. Figure 1 is the introduction page for the exercise.

FIGURE 1. HSI Exercise Introduction

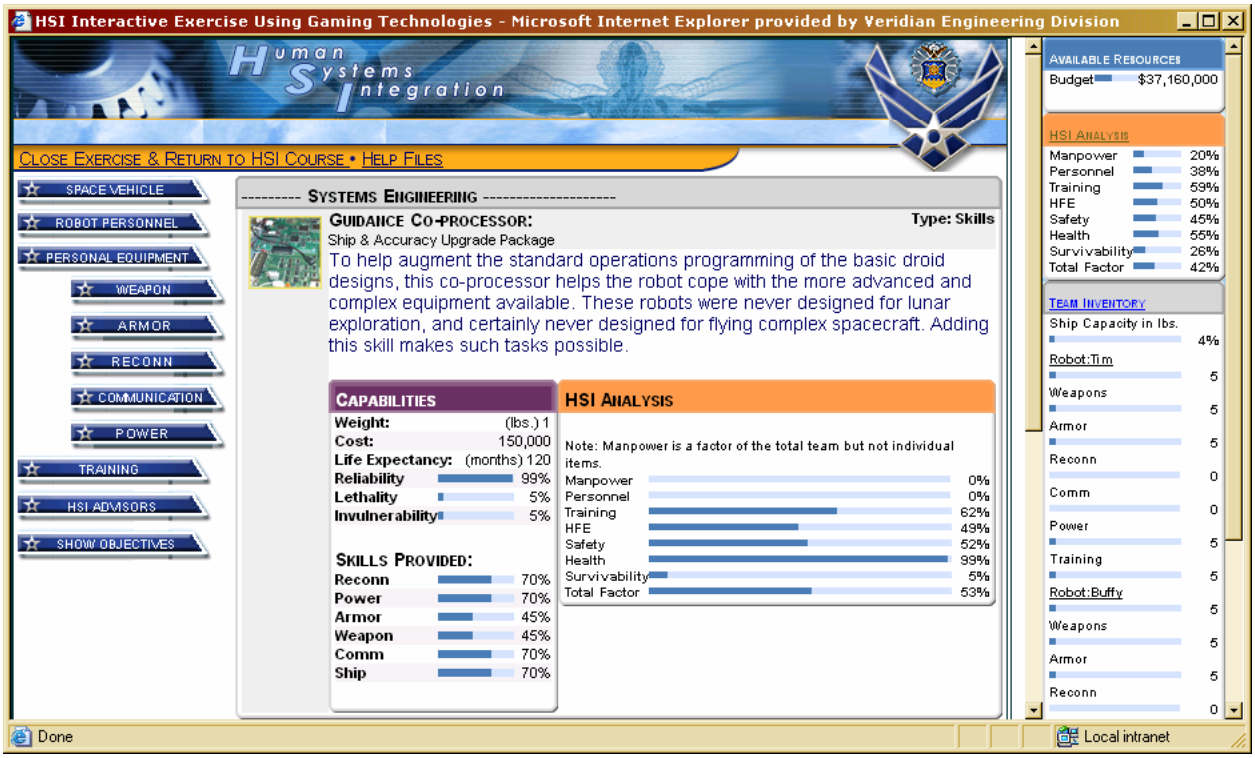


As illustrated, the exercise is based on a moon mission to investigate the landing of an alien force and to ultimately secure the moon. Robots represent the human and have human characteristics. There are three phases. Phase One orients the learner to the exercise environment. Here they become familiar with the look and feel of the exercise, discover what each of the game components provides and enables the learner to do, and to see how learner inputs will be used. Because it is an orientation the Phase One results, good or bad, are not stored.

Phase Two begins with the knowledge that the aliens are indeed hostile and must be dealt with. Additionally, the learner begins to understand how the lack of appropriate HSI impacts mission success. Now the learner has the opportunity to acquire weapon systems for a new mission to secure the moon. Figure 2 illustrates the type of information provided to the learner.

The capabilities of each item are provided as well as information relevant to the HSI decision. Like in the real world, HSI advisors are available to assist the learner. These advisors help learners focus on system characteristics that impact their particular HSI domain area. For example, the System Safety advisor provides assistance in evaluating design features and operating characteristics of a system to minimize possible machine, personnel, or system accidents. Each advisor has his or her own particular bias, and it is up to the learner to make the appropriate trade-offs among them. The learner can get information on these trade-offs in the right hand column. The HSI Analysis numbers are recalculated and the results displayed for each acquisition decision that the learner makes. By studying the analysis information, the learner can begin to understand the interrelationships of the HSI elements. Only by properly balancing these elements can the learner's mission succeed. At the end of each mission, the learner is provided with a mission debriefing report. This report allows the learner to see exactly what went right

FIGURE 2. Interactive Exercise Components



and what went wrong. In addition, it illustrates the percent of damage associated with each HSI element (Manpower, Training, Personnel, Human Factors Engineering, etc.). If the learner's mission fails, Phase Two (and later Phase Three) will need to be repeated. This report allows learners to understand the impacts of their decisions and to make the appropriate adjustments.

The third and final phase allows the learner to understand how HSI optimizes total system performance and minimizes total ownership cost. Phase Three entails establishing a moon base and requires the learner to study the impact of acquisition decisions on long term operating and support (O&S) costs as well as overall system performance. The learner is given the opportunity to understand how the ability of the moon base to operate efficiently in the future and how well it can accomplish its long term mission is greatly impacted by decisions made today.

The exercise is intentionally challenging in that the learner must pay attention to the information provided to successfully complete the mission. There is risk of failure for those that skim through the materials; however everyone can complete the exercise successfully. By working through the trade-offs, the learner will have a greater understanding of the rewards for applying HSI correctly.

Exercise Algorithms

Below are some examples of the terms used within the exercise and how physical characteristics are related to the concepts of Human Systems Integration.

- **Weight (**Limited Resource) *Affects Manpower & Human Factors Engineering:* This is the mass of an item and will be very important as it takes a huge amount of energy to transport large, heavy items long distances in space. Spacecraft have very limited weight capacities, and Robots have limited capacities to carry equipment due to their size and strength.

- **Skills (**Training Requirements) *Affects Training, Personnel, & Human Factors Engineering:* Each piece of equipment possesses the skill attributes in various degrees. A Robot with higher attribute values implies that they will find items inherently easier to use, or more effective in providing capability. For example a weapon with a "high" attribute is harder to use, but a Robot with a "high" weapon skill attribute will find this weapon easier to wield than a lesser-trained counterpart.

- **Reliability** (Capability Assessment) *Affects Manpower, Occupational Health Hazards, Safety, Survivability and Human Factors Engineering:* This is how dependable the equipment is under adverse conditions and how easily repaired an item is in the field. High reliability lowers Lifecycle costs. It also represents a highly important aspect of HSI factors: since machines more easily maintained represent machines better designed around the physical limitations of the mechanic as well as more dependable capability. In general, high reliability means items are more likely to function. Low reliability will result in failures, and broken equipment will diminish the team's capabilities.

JOINT HSI COMMUNITY OF PRACTICE (COP)

The fourth learning goal addresses the need for continuous learning, knowledge sharing, and peer support. As the acquisition workforce implements HSI in their programs, they need to be

FIGURE 3. Joint HSI Community of Practice

able to access current and relevant information. To address this need, a Joint HSI Community of Practice (CoP) has been created (Figure 3.)

Located within the Air Force Materiel Command's *Knowledge Now* system, it is designed to support employee performance through interaction and collaboration with others doing HSI work, and through instantaneous access to the instructional information, procedural documents, policy memos, and analytical and scientific reports relevant to completing the job being performed.

Knowledge Now consists of a community of communities' architecture, of which the HSI CoP is only one of over 200+ communities. This "community of communities" brings together people with like needs and provides the training and support they need to accomplish their jobs. Each community, including the HSI CoP, determines the content of its own workspace. The full operational range of this CoP involves a significant number of possible features, including but not limited to Discussion Forums, Document Management, Community Calendars, Wisdom Exchange, FAQs, News Tickers, "Tell a Friend," Alert Notifications, and Metrics Tracking (to measure the benefits of these features based on usage).

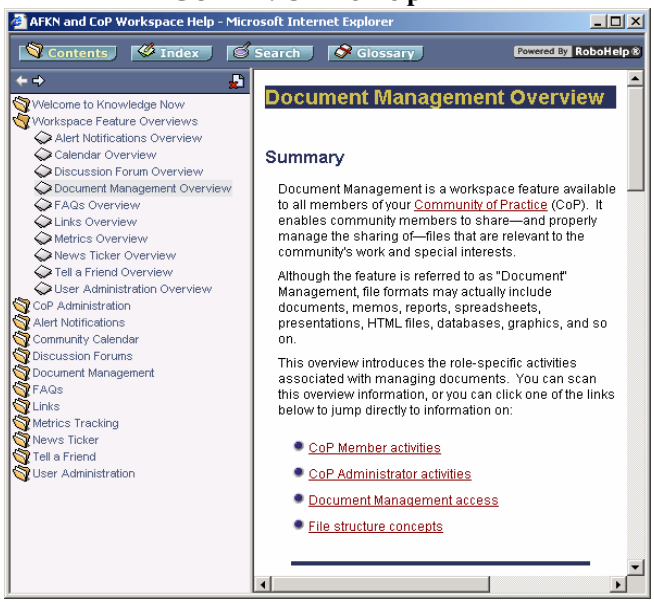
Maj Lindbergh, USAF 311th Human Systems Wing, is the principal Knowledge Owner of the CoP site and is working with his staff to populate the site with current policy updates and guidance affecting and promoting HSI. He is assisted by Nancy Dolan, USN, and Marjorie Zelko, USA, to create a central location for sharing HSI knowledge, accessing peers, and finding available learning resources across services.

Links to related sites are being added. Under Document Management members are able to find the most recent policy and guidance for HSI. These documents are new and reflect changes made since the DoD 5000 restructure. In addition, success stories, technical papers, and lessons learned can be submitted to the Knowledge Owners and added to the site. The Calendar feature will be used to identify events at the community level, such as the Joint HSI Symposium. Highlighted items can be advertised within the scrolling News Ticker. Clicking on a ticker item enables the member to view further details. Members may also contact other CoP members through a mailing list or individually, or establish a Discussion Forum as a mechanism for capturing inputs from many members in one central location.

In addition to this Homepage level site, individual project-level or team-level CoPs can be established. Access to these areas is username / password secure so that working teams can privately collaborate on projects.

Another powerful feature within the *Knowledge Now* site is its Search Engine. As illustrated in Figure 4, users may conduct a search throughout *Knowledge Now*, search all non-restricted AFMC web sites, Deskbook, the FAR site, as well as many commercial sites. Also, access is available to the Air Force Portal search, which is powered by the *Knowledge Now* search engine. The site is intentionally easy to use to encourage participation. As illustrated in Figure 4, online tutorials and help enable each CoP member and guest to use the many features of the CoP. Step-by-step guidance can help Site Administrators set-up and customize the workspace dependent on their community's unique needs.

FIGURE 4: Online Help



CONCLUSION

The purpose of this paper was to describe new resources available to support the workforce accomplish its HSI goals of improved system performance and reduced life cycle costs. Representatives of the Air Force, Army, and Navy have teamed to provide resources that can be shared to encourage collaboration and knowledge sharing. These resources include:

- An "*Introduction to HSI"* tutorial for helping the workforce understand the importance of HIS
- An interactive game-like exercise enabling the learner to understand the relationships among the HSI elements and with system performance and total ownership costs, *and*
- A Joint HSI Community of Practice site to support continuous learning, knowledge sharing, and easy access to peers.

We encourage all who are working within the HSI domain to visit the Joint HSI Community of Practice at https://afkm.wpafb.af.mil/ASPs/HQ_AFMC/HsCopEntry.asp?Filter=HP-HS and become a member. Let the CoP Knowledge Owners know what type of resources you need, and share your knowledge with your peers. Take advantage of the training offered and use the "Tell-a-Friend" feature to invite others to the community.

Follow-on efforts are under way to create additional "how-to" resources and will be available through the Community of Practice when they are available. We look forward to the opportunity to assist with the application of HSI within your programs.

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Desiree Tryloff, PMP *is the author and Program Manager for the HSI E-Learning project. She is employed by Veridian, Inc. and is Manager of the E-Learning and Knowledge Management Initiatives Program (desiree.tryloff@veridian.com.). Ms Tryloff received her MBA at Wright State University in Ohio in 1986 and has a BS/BA from Bowling Green State University, also in Ohio. She has been developing web-based learning products for the Air Force since 1986, and is the principal designer of the Air Force Institute of Technology's Virtual Schoolhouse, one of the first internet-based Learning Management Systems. Currently, she is the Program Manager of the Air Force Materiel Command's Knowledge Now program's E-Learning efforts. This effort entails integrating e-learning throughout the Knowledge Now site such that it is "pushe" to relevant communities of practice and it can be more easily "pulled" upon request.*

Maj Robert Lindberg, USAF, *is on active duty supporting the 311th Human Systems Wing by leading Human Systems Integration for the USAF. Major Lindberg has a variety of experience in various military activities, including acquisition logistics, flight test, aircraft engines, avionics, maintenance, manufacturing, production, program management, and property management.*

Marjorie Zelko *is a Senior Technical MANPRINT Staff Officer for Headquarters, Department of the Army, Office of the Deputy Chief of Staff, G-1, MANPRINT Directorate. Her primary responsibility is to provide DA-level MANPRINT oversight for a wide variety of major acquisition systems. During her 16 years in this position, she has authored countless MANPRINT Assessments and has briefed the Army leadership at major acquisition decision meetings. In addition, she has authored MANPRINT policy and guidance and has assisted Office of the Secretary of Defense and the Joint Services in establishing relevant Human Systems Integration policy. Prior to this assignment, Ms Zelko has had an extensive civilian Army career holding a wide variety of positions in the areas of force structure, training, and personnel.*

AIR FORCE MATERIEL COMMAND *KNOWLEDGE NOW:* WEB RESOURCE FOR WORKFORCE COLLABORATION AND LEARNING

Sherrie Carper
Veridian Corporation

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Characterized by radical and discontinuous change, the global environment demands anticipatory responses from the Department of Defense (DoD): a daunting undertaking for the Air Force Materiel Command (AFMC) culture. To carry out the mandate of transformation, AFMC recognizes it must loosen the strings that bind it to rigid processes. It must create a culture—a system—that supports flexibility and innovation through collaboration, people networks, and on-the-job learning.

AFMC *Knowledge Now*, an initiative of the Air Force Materiel Command Requirements Directorate (AFMC/DR), applies commercial knowledge management concepts and technologies to respond to evolving business challenges. This Internet-based system is designed to accelerate warfighter support by giving the AFMC workforce a mechanism for finding and accessing time-critical knowledge and performance support resources. It connects the people within AFMC together so they may share organizational lessons learned, community wisdom and advice, and knowledge and educational resources. And through collaboration and the synthesis of ideas, it becomes a vehicle for driving innovation to support current and future projects.

Understanding the relationship between knowledge and learning is key to recognizing the significance of *Knowledge Now*. *Knowledge* is embedded in people; thus, social interaction fosters its creation and transfer. A *Knowledge Management* (KM) system simply provides a means for people who use knowledge content to be involved in its creation; thus, KM sites distinguish themselves from information-laden web sites by their focus on community and relevant collaboration.

Hand-in-hand with the creation and transfer of knowledge is *learning*, a continual process by which employees acquire or enhance skills and knowledge to improve performance. *e-Learning* applies Internet technologies to deliver an array of online solutions for enhancing employee knowledge and performance when they need it the most—on the job. The resulting "learn before doing" climate encourages participation and involvement at the employee level, which is instrumental to continuous improvement on an organizational scale.

AFMC's *Knowledge Now* successfully merges KM and e-Learning to support employee performance through interaction and collaboration with others doing similar work, and through instantaneous access to the instructional information, procedural documents, policy memos, and analytical and scientific reports relevant to completion of the job being performed. This "anywhere, anytime" access provides a path to critical knowledge as it exists in explicit or tacit form. Explicit knowledge resides within concrete, "written" sources, such as documents, databases, and courses, and is maintained through an organization's file management processes. Essentially, it consists of principles, policies, and procedures—the "stuff" of manuals. Tacit

knowledge represents more intangible, informal workforce expertise—including lessons learned and unique experiences—and is captured through virtual workspaces set up to promote communication and sharing among members of the organization.

As reflected in Figure 1, *Knowledge Now* features knowledge discovery through enhanced search capabilities, access to existing Community of Practice (CoP) workspaces, and links to resources including the *e-Learning Center*, where you can initiate online training or other useful knowledge development activities.

Figure 1. ***Knowledge Now*** **Site: https://afkm.wpafb.af.mil**

The *Knowledge Now e-Learning Center* provides the Air Force Research Laboratory (AFRL) and other AFMC organizations with access to complete online courses as well as individual learning objects. Through a formal partnership with AFMC, the Air Force Institute of Technology (AFIT) supports the command's online education initiatives.

The AFIT Virtual Schoolhouse (VSh), first deployed by AFMC in 1996 under Lightning Bolt 9, provides relevant online courses to the Air Force workforce, including government and industry partners. "Our mission is to support AFMC by providing education on timely subjects. In this manner, we help AFMC achieve its goals by educating the workforce on new initiatives, processes, and policies," states Maj Rich Remington, AFIT/LSB.

Two hot topic courses are *Human Systems Integration* and *Evolutionary Acquisition*. Located at **https://www.vsh.afit.edu**, these courses are free and available to anyone connecting through a "dot mil" location; others may contact the AFIT VSh registrar to gain access to these and other relevant courses.
At times, an individual may need a lesson on just one aspect of a larger subject. In these situations, learning objects—pertinent slices of information—make it easy for people to learn what they need to know to accomplish a particular job. For example, although an entire Risk Management course is available, you may need to learn something pertaining just to risk planning. As described by Desiree Tryloff, Manager, e-Learning and KM Initiatives, Veridian Corporation, "We designed the *e-Learning Center* to let you find and access single lessons outside the context of an existing course framework. The relationship to the course is maintained so that you can return and take the entire course when you have time."

The AFMC Knowledge Management Program Office has created the integrated, collaborative *Knowledge Now* environment based upon communities of practice. This "community of communities" brings together people with like needs and provides the training and support they need to accomplish their jobs. "Think of a CoP as a 'Community of Experience.'" Experience is what has to be transferred to achieve labor savings," says Randy Adkins, AFMC Knowledge Management Program Manager. "*Knowledge Now* links knowledge consumers and knowledge providers to promote sharing, collaboration, and innovation within the workforce."

Because every community determines the content of its own CoP workspace, the functionality available to its members varies accordingly. The full operational range of a CoP involves a significant number of possible features, including but not limited to Discussion Forums, Document Management, Community Calendars, Wisdom and Advice, FAQs, News Tickers, "Tell a Friend," Alert Notifications, and Metrics Tracking (to measure the benefits of these features based on usage). Thus, a CoP workspace is customized to meet the knowledge needs of the organization that uses it. For example, the Cost Estimating CoP provides access to cost models and "Wisdom and Advice" access to Senior Cost Estimators or Analysts, whereas an AFRL CoP could include engineering models, along with expertise from leaders in science and engineering. "We have designed *Knowledge Now* using a multi-tier system so that you do not need to be a web-developer to manage your Community of Practice . . . instead, you can focus on content," says Douglas Brook, *Knowledge Now* Development Lead, Triune Software, Inc. The benefit of applying this tiered approach is reflected in how quickly the *Knowledge Now* team can respond to an organization's request for a CoP site. Because each tier represents a different level of content and customization, the Knowledge Management Program Office can establish a Tier 1 site (standard off-the-shelf features) within hours and a Tier 2 site (some custom definition) within days, each at virtually no cost to the customer. Tier 3 sites, which require a higher level of customization, can be turned around within three months.

CoP workspace content also directs members to relevant e-Learning opportunities. For instance, Human Systems Integration (HSI)—sponsored by AFRL/HE—and Evolutionary Acquisition (EA) communities of practice reside within the *Knowledge Now* site. Their respective workspaces exemplify the beneficial integration of KM and e-Learning, providing community members with shared tools, knowledge resources, communication links, training opportunities, and other support mechanisms. Noted earlier in this article, both the HSI and EA courses are

referenced within applicable CoP workspaces. Both courses directly support initiatives governed by mandatory DoD policy—specifically, DoD 5000.2.R. Additionally, each reflects an effective blend of conventional and leading-edge instructional methods. The result is an engaging, interactive e-Learning experience that appeals to and informs the target audience, thus encouraging and motivating that audience to seek more of the same. The use of gaming technology is one popular aspect of the course design. "These highly interactive learning exercises are designed to simulate real-life situations and scenarios, requiring the learner to act, interact, and make decisions based on available information and resources," notes Desiree Tryloff. Coupled with integrated assessment techniques, this role-based approach to learning represents a well-established method for ensuring learner comprehension and retention.

Undoubtedly, the trend towards blended, seamless integration of KM and e-Learning resources, coupled with the increasingly complex knowledge and learning demands of today's Air Force will continue to require equally innovative solutions. The robust *Knowledge Now* environment is a direct response to these evolving expectations; it also reflects AFMC's commitment to continue exploring the cutting-edge strategies and technologies needed to satisfy each unique customer organization. Site capabilities put principle into practice by promoting and leveraging knowledge as the primary tool—the "product"—necessary for supporting AFRL and other AFMC organizations. The quantifiable advantages, including increased workforce competency, improved avenues for learning, and reduction of costs in education and training, are evident. What remains to be experienced are the more intangible benefits of an atmosphere geared towards innovation, inspired contribution, and other collaborative knowledge endeavors. Information on how your organization can establish a Community of Practice is provided on the *Knowledge Now* home page, at **https://afkm.wpafb.af.mil.**